



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/087,484	03/01/2002	Robert W. Sparrow	SP01-034	3021
22928	7590	04/30/2004	EXAMINER	
CORNING INCORPORATED			SCOTT JR, LEON	
SP-TI-3-1				
CORNING, NY 14831			ART UNIT	PAPER NUMBER
			2828	
DATE MAILED: 04/30/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/087,484

Applicant(s)

SPARROW, ROBERT W.

Examiner

Leon Scott, Jr.

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-26 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3,4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____

Leon Scott, Jr.
Primary Examiner



**UNITED STATES
PATENT AND
TRADEMARK OFFICE**

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In: lines 6 and 7 of claim 1; lines 2 and 3 of claim 6; lines 1 and 2 of claim 13; and lines 1 and 2 of claim 19 it is not clear how passing the laser beam through a second barium fluoride window will provide an excimer laser with a repetition rate greater than or equal to 4 kilohertz, indeed no method steps or structure has been claimed which will produce such a desired result; claims 1-4,6,13 and 19 are indefinite and incomplete. Likewise all of claims 2,5,12 and 18 recite a desired result while failing to recite the necessary steps and/or structure to provide said result since no method steps or structure has been claimed which will produce a laser beam which has a power of greater than or equal to 10 mJ. In line 1 of claim 1 it is not clear within the context of claim language what the step(s) is/are that produce a narrow width excimer laser beam; claim 1 is indefinite and incomplete. In line 3 of claim 1 and in line 2 of claim 17 it is not clear within the context of claim language how, lacking sufficient steps and/or structure(the resonant cavity) the laser beam is oscillated; claims 1 and 17 are indefinite and incomplete. In claims 3,10,21 and 22 it is not clear what the step/structure is that allows the window(s) to maintain

Art Unit: 2828

durability; claims 3,11,21 and 22 are indefinite and incomplete. Since an *excimer laser* comprises more than a laser beam source, one or more windows and a source for annealing the windows; claims 4-10 and 11-15 are indefinite incomplete. In claim 16 since it is not clear where or how the excimer laser window connectively relates to the excimer laser as a whole, for example where is the barium fluoride window located; claim 16 is indefinite and incomplete. In lines 2 and 3 of claim 17 what window is being claimed; claim 17 is indefinite and incomplete. In line 5 of claims 1 and 17 it is not clear within the context of claim language how or what the steps are such that the laser beam is controlled to a predetermined narrow width; claims 1 and 17 are indefinite and incomplete.

Claims 16 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for an excimer laser, it does not reasonably provide enablement for barium fluoride. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to arbitrarily employ barium fluoride in the excimer laser in any or every conceivable excimer laser window and although such an element may be used in a variety of locations they have not all been disclosed by applicant. The invention is not commensurate in scope with the claim; indeed a *single means claim* (claim 16) does not comply with the enablement requirement of 35 U.S.C. 112, first paragraph in that under 35 U.S.C. 112, sixth paragraph the interpretation of a limitation is understood to be limited to "an element to a claim in combination", however the limitation in this claim (claim 16) is not directed to a combination but to the unclaimed means or step for applying a protective barium fluoride coating or using a barium fluoride window in an excimer laser, accordingly the invention is not commensurate in scope with the claim (i.e. claim 16).

Art Unit: 2828

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 4 and 16 are rejected under 35 U.S.C. 102(b) as being *anticipated* by Tsuboi et al (JP406250015A) .

Tsuboi et al (JP-'015A) : discloses an excimer laser serving as a source and a window of the laser coated with barium fluoride. Claims 4 and 16 are anticipated.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5,7-12,14-18 and 20-26 are, insofar as definite, rejected under 35 U.S.C.103(a) as being unpatentable over Tsuboi et al (JP406250015A) as applied above when considered with Das et al (5,978,409) and Mizugaki et al(6,146,456) and Mihashi et al (JP4112288898A).

Das et al ('409) discloses: an excimer laser which produces an oscillating laser beam which exits; a grating based line-

narrowing apparatus having a prism beam expander with at least four prisms; each prism is positioned at an incidence angle between 67 and 71 degrees; a single layer coating of high refractive index, robust material, such as Al.sub.2 O.sub.3, is applied to the hypotenuse face of each prism, providing an efficient, anti-reflection coating;⁷ the prism arrangement coatings have greatly increased durability and were tested for 30 million, 10 mJ pulses (see Abstract and fig.1); the beam is repeatedly line narrowed as it passes through the line-narrowing module thereby producing a laser with a very narrow spectrum of less than 1.0 pm.

Mizugaki et al(6,146,456) discloses: a method of annealing and manufacturing a single crystal of fluoride whereby it is possible to obtain a single crystal of calcium fluoride, etc., which is appropriate for use in an optical system, such as a lens or window material, for various devices that utilize a laser in the ultraviolet wavelength range or the vacuum ultraviolet wavelength range, such as a stepper. Mizugaki et al('456) also discloses that the reference invention is suitable for an optical system with wavelengths of 250 nm or less (photolithography utilizing KrF or ArF excimer lasers, F.sub.2 lasers, solid-state lasers). Given the teachings of the references to anneal a single crystal of fluoride , it would be obvious to one of ordinary skill in the art that to anneal the barium fluoride crystal window(s) of Tsuboi et al (JP406250015A) one would be motivated to substitute one or both of the barium fluoride crystals of Tsuboi et al (JP406250015A) for those of Mizugaki et al('456). Applicant device is obvious.

Mihashi et al (JP4112288898A) discloses: an excimer laser annealing window of an excimer laser annealing apparatus which is obliquely cut to prevent an excimer laser beam

Given the structure of the references, it would be obvious that one of ordinary skill in the art desiring to anneal the excimer laser window(s) such that the laser window has a small strain (birefringence) which can be used for precision optical systems, such as excimer laser steppers would be motivated to substitute the barium fluoride crystal of Tsuboi et al (JP406250015A) for the

Art Unit: 2828

calcium crystal of Das et al ('409) or Mizugaki et al('456) such that the excimer laser could be used in optical system with wavelengths of 250 nm or less It would further be obvious that depending upon the desired result or intended use one would be motivated to use the disclosure of Mihashi et al (JP '898A) or Mizugaki et al('456) to anneal the laser window(s) of Tsuboi et al (JP '015A) or Das et al ('409). Claims 1,2,4,5,7,9,11,12,14,16,17,18 and 21-26 are obvious.

As to the maintenance of durability over 500 million pulses in claims 3,10 and 20 and the of durability over 900 million pulses in claim 22, given the 30 million pulses in Das et al ('409) one of ordinary skill in the art desiring maintenance of durability in the range of 500-900 million pulses would be motivated to determine by a matter of routine experimentation which materials or coatings of materials would produce the desired result; claims 3,10,20, and 22 are obvious.

As to the argon or krypton fluoride laser to from this day of him . ghostly sources in claims 5,7,8,14,25 and 26, it is pointed out to applicant that recitation of either one of argon fluoride or krypton fluoride separately in the claims (for example in claims 7 and 8) constitute nothing more than a limited Markush group, thus any reference disclosing one or the other of such lasers inherently discloses the other. However this point notwithstanding the disclosure of an argon fluoride laser in Das et al ('409) and ArF or KrF in Mizugaki et al('456) inherently meet the limitations of the claims; thus all of claims 5,7,8,14,25 and 26 are obvious.

Kawahara et al (JP-'499) if cited for its teaching of excimer laser annealing.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leon Scott, Jr. whose telephone number is 703-308-4884. The

Art Unit: 2828

examiner can normally be reached on Monday - Friday, 6:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul P. Ip can be reached on (703)308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-3431.



**Leon Scott, Jr.
Primary Examiner
Leon Scott, Jr.
Primary Examiner
Art Unit 2828**

lsjr

April 3, 2004